Section: **2.1**
Project Sizes

Description: The lifecycle model used in this software engineering methodology can be applied to software projects of varying sizes. In this model, software projects are divided into three sizes: large, medium, and small. Each project size uses the same lifecycle stages. Medium and small projects may compress or combine stages and required documentation in direct proportion to the size of the development effort. The major differences between project sizes are determined by the following items.

- The estimated total labor hours (the level of effort) required to complete the project.
- The use of cutting edge or existing technology.
- The type and extent of both user and system interface requirements.
- The project's contribution to, and impact on, the activities carried out by the system users and other Departmental organizations.

The requirements, constraints, and risks associated with the project also influence the determination of project size. The project size and any plans for adapting the lifecycle model are documented in the Project Plan, which is reviewed and approved by the system and other project stakeholders.

The following subsections provide descriptions of the three project sizes used in this lifecycle model. *Exhibit 2.1-1, Software Project Sizes*, shows the level of effort and complexity measures used to define the three sizes.

Large Projects: Large software engineering projects are included in the system owner's organizational long-range plans. Headquarters-wide and Departmentwide projects are usually developed as large-sized projects and are likely to require a major acquisition of hardware and software. Typically, the larger the size and scope of the project, the greater the detail and coordination needed to manage the project. As risk factors and levels of effort increase, the scope of project management also increases and becomes a critical factor in the success of the project.

Medium Projects: Medium software engineering projects require less effort than large projects, typically use existing hardware and software, and might not be captured during the organizational long-range planning process. Medium size projects are frequently developed to automate operations within a programmatic office or among a limited number of sites, and may be used to interface with other software products. Planning medium size projects within the context of the system owner organization's overall mission, and building in compatibility to the Departmental computing environment can improve the software product's ability to interface with other users, organizations, and applications; and increase the product's longevity.

Small Projects: Small software engineering projects require minimal effort and use existing hardware and software. The operational details of a small project can easily be managed by the project manager, so formal documentation requirements are limited. A project is small when the software being developed will have limited functionality and use, meets a one-time requirement, or is developed using reusable code.

Exhibit 2.1-1. Software Project Sizes

Complexity (and associated characteristics)	**Effort Required** (in staff months)		
	0-8	**9-24**	**25-n**
Low: - Existing or known technology - Simple interfaces - Requirements well known - Skills are available	Small	Small	Medium
Medium: - Some new technology - Multiple interfaces - Requirements not well known - Skills not readily available	Small	Medium	Large
High: - New technology - Numerous complex interfaces - Numerous resources required - Skills must be acquired	Medium	Large	Large